

### Remarks

Claims 1, 8 through 18, and 21 through 27, as amended, are now pending.

Claims 2 through 7, 19 and 20 have been cancelled.

New claims 23 through 27 have been added.

In particular, process claim 1 has been amended to more clearly require that a smectite clay is intercalated in situ within the elastomer host by blending a quaternary ammonium salt therewith and in the absence of pre-swelling the clay in an aqueous dispersion. Adequate basis is found in the Applicant's specification on Page 6, Lines 17 and 18.

### The Rejection

The following patents have been relied upon to reject various of the Applicant's claims:

<u>U.S. Patents</u>	
5,936,023	Kato, et al (Kato)
6,034,164	Elpass, et al (Elpass)
6,060,549	Li, et al (Li)

Remaining Claims 1, 8, and 9 through 13 have been rejected under 35 U.S.C. Section 103(a) as being unpatentable over Kato.

Remaining Claims 8 and 14 through 18 have been rejected under 35 U.S.C. Section 103(a) as being unpatentable over Kato in view of Elpass.

Remaining Claims 21 and 22 have been rejected under 35 U.S.C. Section 103(a) as being unpatentable over Kato in view of Li.

### The Invention

The process of the Applicant's claimed invention is contended to be novel and a significant departure from the cited Kato, Elpass and Li references, whether cited individually or in combination.

In particular, the process of the Applicant's amended claims is based upon an intercalation and exfoliation of a smectite clay in situ within an elastomer host via blending a quaternary ammonium salt with a mixture of the clay and elastomer host and *in the absence of* pre-swelling the clay in water. It is contended that Kato and Elpass teach away from such a process of intercalation of a smectite clay.

Accordingly, it is contended that the Applicant's composition and article of manufacture claims, dependent from the Applicant's process claims, are also patentably distinct from Kato, Elpass or Li or their combination.

Rejection of Process Claims 1, 8 and 9 and Composition and Article claims 10 through 13 Under 35 U.S.C. Section 103(a)

Careful inspection of the Kato reference reveals that it teaches away from the Applicant's process of amended claim 1 and therefore the remaining dependent process claims 8 and 9, composition claims 10 through 12 and article claim 13.

It is contended that the process of the Applicant's amended claim 1 is significantly novel in view of and patentably distinct from the process of Kato. In particular, the process disclosed in Kato requires:

- (1) a clay to be first organized,
- (2) the organized clay to then be mixed with oil and/or plasticizer, and
- (3) the mixture of organized clay, oil and/or plasticizer then blended with an elastomer.

In particular, Kato requires the clay to be organized by an ion exchange between the inorganic ion of the clay and the organic onium ion (e.g. quaternary ammonium salt) in which the clay is dispersed in water and an organic onium ion-dispersed in water is added to the clay-water dispersion which is entirely contrary to the process of the Applicant's amended claim 1.

This teaching of Kato is believed to be a relatively conventional method of intercalating the clay. Significantly, such teaching of Kato leads one directly away from the process of the Applicant's amended claim 1 which contrarily requires the smectite clay to be intercalated in situ within the elastomer host (via blending a quaternary ammonium salt with a mixture of the clay and elastomer host) in absence of pre-swelling the clay in water. Kato requires the clay to be "organized" by both dispersion in water and treated therein by an organic onium ion. Moreover, it is contended that such process of Kato cannot be reconstructed to teach or suggest the process of the Applicant's amended claim 1.

Thus the process of the Applicant's amended claim 1 is not obvious in view of and significantly distinct from the process of Kato, and therefore the remaining dependent process claims 8 and 9, composition claims 10 through 12 and article claim 13 are also significantly distinct from Kato.

Rejection of Process Claim 8 and Tire Claims 14 through 18 under 35 U.S.C. Section 103(a)

As pointed out above, Kato teaches away from the process of the Applicant's amended claim 1. It is contended that Kato cannot be reconstructed to teach or suggest the Applicant's claimed process nor the resultant rubber composition and tire having a component of such rubber composition.

Careful inspection of the Elpass reference indicates that it relates to mixing a pre-modified clay with a combination of two melt processible polymers. The clay is pre-modified by modifying the clay with a swelling agent in a liquid dispersant such as water. The clay may be, for example, a montmorillonite clay or hectorite clay. The swelling agent may be an hydrocarbyl onium salt (e.g. dialkylammonium).

Clearly, as in Kato, Elpass leads one away from both the Applicant's process claim 8 and tire claims 14 through 18 which require the clay to be intercalated and exfoliated in situ within the elastomer host in the absence of pre-swelling for clay in water.

Accordingly, it is contended that the combination of the Kato and Elpass references does not make out a prima facie case of obviousness of the Applicant's claimed invention under the requirements of 35 U.S.C. Section 103(a). Indeed, an application of the combination of Kato and Elpass references would require a significant and substantial reconstruction of the Applicant's process and tire claims combined with an undue amount of experimentation.

Rejection of Claims 21 and 22 Under 35 U.S.C. Section 103(a)

Claims 21 and 22, as well as new claims 23 through 27, depend upon selectively mixing a coupling agent with the rubber composition prepared by the Applicant's amended process claims.

Significantly, the Kato and Elpass references, which teach away from the Applicant's amended process claims, also do not teach or suggest an inclusion of a coupling agent.

Even if the Li reference could be viewed as teaching one to use a coupling agent in the process of Kato or Elpass to produce a product, for which it is contended that it does not do so, the Li reference cannot teach one to use a coupling agent in the process of the Applicant's amended claims to produce a product without completely reconstructing the process and resulting product of Kato and Elpass because of the aforementioned significant disparity between the process of the Applicant's amended claims and the process required by Kato and Elpass.

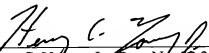
Accordingly, it is contended that a combination of Li taken with Kato and/or Elpass does not make out a prima facie case of obviousness of the Applicant's claims 21 through 24.

Conclusion

It is contended that the combination of the cited references teach away from the invention of the Applicant's amended claims.

It is further contended that the invention of the Applicant's amended claims is not obvious in view of, is patentably distinct from, and that a prima facie case of obviousness is not made out by the Kato and Elpass references, or their combination, whether or not taken with the Li reference, under the requirements of under 35 U.S.C. Section 103(a).

Respectfully submitted,

  
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